

**ABSTRACT**

A method has been developed for surface modifications of high temperature resistant alloys, such as FeCrAl alloys, in order to increase their resistance to corrosion at high temperatures. Coating it with a Ca-containing compound before heat-treating builds a continuous uniform and adherent layer on the surface of the alloy, that the aluminum depletion of the FeCrAl alloy is reduced under cyclic thermal stress. By this surface modification the resistance to high temperature corrosion of the FeCrAl alloy and its lifetime are significantly increased.